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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/657,369

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Chan-Yul Kim

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09/29/2006

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EXAMINER

LIU, LI

ART UNIT

PAPER NUMBER

2613

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Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/657,369	Applicant(s) KIM ET AL.	
	Examiner Li Liu	Art Unit 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 08 September 2003.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-13 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 1-13 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on 08 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☒ All b) ☐ Some * c) ☐ None of:

1. ☒ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>4/25/05, 3/6/06, 6/5/06</u> .	6) <input type="checkbox"/> Other: _____

U.S. Patent and Trademark Office
PTOL-326 (Rev. 08-06)

Office Action Summary

Part of Paper No./Mail Date 20060921

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statements (IDS) submitted on April 25, 2005, March 6, 2006 and June 5, 2006 are being considered by the examiner.

Specification

2. The disclosure is objected to because of the following informalities: page 7 line 19, the "FIG. 1" should be changed to "FIG. 2".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Pfistner (WO 00/74278).

1). With regard to claim 1, Pfistner discloses an optical subscriber network system for performing bidirectional transmission/reception of digital broadcast signals and Internet signals (Figure 2), comprising:

(I) a server-side bidirectional transmitter (201 and 212 in Figure 2) comprising:

(a) a first semiconductor laser (TX 202 in Figure 2, page 6, paragraph 4 line 5) for optically modulating and transmitting the optically modulated digital broadcast signals (page 6, paragraph 4 line 2-3);

(b) a second semiconductor laser (207 in Figure 2, page 5, paragraph 4 line 2) for transmitting downstream Internet data (102, BACKGROUND);

(c) a server-side photodiode for receiving upstream Internet data (209 in Figure 2, page 5, paragraph 4, line 3-4);

(d) a band pass filter (BPF) coupled to an input of the server-side photodiode, for selecting the upstream Internet data (page 10, second paragraph); and

(e) a server-side multi-branch optical waveguide element (WDM filters, page 10, second paragraph, and page 4, the third paragraph under DETAIL DESCRIPTION) for separating the optically modulated digital broadcast signals, the downstream Internet data and the upstream Internet data; and

(II) a subscriber-side bidirectional optical receiver (204 in Figure 2) comprising:

(a) a subscriber-side multi-branch optical waveguide element (WDM 350, page 4, the third paragraph under DETAIL DESCRIPTION, and page 10 line 1-2) for separating data transmitted from the server-side bidirectional optical transmitter;

(b) a subscriber-side first photodiode (pin diode 213 in Figure 2 and 313 in Figure 4) for detecting the optically modulated digital broadcast signals transmitted from the server-side first semiconductor laser;

(c) a subscriber-side second photodiode (pin diode 208 in Figure 2 and 311 in Figure 4) for detecting the downstream Internet data transmitted from the server-side second semiconductor laser; and

(d) a subscriber-side semiconductor laser (230 in Figure 2, and 308 in Figure 4, and page 7, paragraph 6) for transmitting the upstream Internet data transmitted from a subscriber part.

2). With regard to claim 2, Pfistner discloses wherein the server-side first semiconductor laser (202 in Figure 2) optically modulates digital broadcast data and transmits the optically modulated signal to the subscriber side bi-directional optical receiver (page 6, paragraph 4-6, and page 7, paragraph 6).

3). With regard to claim 3, Pfistner discloses wherein the server-side second semiconductor laser (207 in Figure 2) optically modulates downstream Internet data and transmits the optically modulated signal to the subscriber-side bidirectional optical receiver (page 5 last paragraph, and page 6, paragraph 5-6).

4). With regard to claim 4, Pfistner discloses wherein the server-side photodiode (209 in Figure 2) is a detecting light element for detecting upstream Internet data transmitted from a downstream subscriber (page 5 last paragraph, and page 6, paragraph 5).

5). With regard to claim 5, Pfistner discloses wherein the server-side band pass filter (BPF) filters all data except for the upstream Internet data transmitted from a subscriber part (page 10, second paragraph).

6). With regard to claim 6, Pfistner discloses wherein the server-side bidirectional optical transmitter and the subscriber-side bidirectional optical receiver have a mutually asymmetric transmission structure (Figure 2, page 4, second paragraph, under DETAIL DESCRIPTION).

7). With regard to claim 7, Pfistner discloses wherein the subscriber-side bidirectional optical receiver further comprises a first band pass filter (BPF) (Filter at 401 in Figure 4, page 9 paragraph 5) between the subscriber-side first photodiode (313 in Figure 4) and the multi-branch optical waveguide element (401 in Figure 4).

8). With regard to claim 8, Pfistner discloses wherein the subscriber-side bidirectional optical receiver filters all digital broadcast signals and wavelength bands except for the optically modulated digital broadcast data transmitted from the server-side first semiconductor laser (page 9 paragraph 4-5, filter 401 in conjunction with receiver 313 extract the downstream overlay channel, which is a CATV signal).

9). With regard to claim 9, Pfistner discloses wherein the subscriber-side bidirectional optical receiver further comprises a second band pass filter (BPF) (Filter 402 in Figure 4) situated between the subscriber-side second photodiode (311 in Figure 4) and the multi-branch optical waveguide element (waveguide 401 in Figure 4, Filter 402 in Figure 4, page 9 paragraph 4-5).

10). With regard to claim 10, Pfistner discloses wherein the second band pass filter (BPF) (402 in Figure 4) filters all wavelength bands and signals except for the downstream internet data transmitted from the server-side second semiconductor (page

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9 paragraph 4-5, filter 402 in conjunction with receiver 311 extract the downstream digital data).

11). With regard to claim 11, Pfistner discloses wherein the first photodiode (213 in Figure 2, and 313 in Figure 4) detects the optically modulated digital broadcast data transmitted from the first semiconductor laser and transmits the optically modulated signal to a digital receiver (Digital TV, page 9 paragraph 5, and claim 9).

12). With regard to claim 12, Pfistner discloses wherein the subscriber-side second photodiode (208 in Figure 2, and 311 in Figure 4) detects downstream internet data transmitted from the server-side second semiconductor laser and reconfigures the data into an form suitable for viewing by a subscriber on a subscriber computer (page 9 paragraph 5, the output from 311 to "Digital TIA/Demond").

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pfistner (WO 00/74278) in view of Foltzer (US 6,961,521).

Pfistner discloses all of the subject matter as applied to claim 1 above, but Pfistner does not teach that the photodiodes are VCSELs (Vertical Cavity Surface Emitter Lasers) having different wavelength bands.

However, Foltzer, in the same field of endeavor, teaches to use the VCSELs as the photodiodes (column 2 line 28-60). Foltzer discloses that the VCSEL-based transmitter enables light to be easily coupled from the VCSEL to the fiber, because their mode volumes, including surface area and emission angle, are closely matched. Furthermore, the VCSEL is not peak power limited in terms of its optical damage threshold. VCSEL cavity mirrors are distributed, rather than lumped as in Fabry-Perot devices. This prevents emission facet damage due to localized photon pressure. Therefore, the VCSEL can be driven to higher output power levels as long as the average power level is within acceptable limits that prevent burnout.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use VCSELs taught by Foltzer to the system of Pfistner so that the coupling loss can be reduced, and signal power can be increased.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Dudley (US 6,970,653) discloses a fiberoptic system for communicating between a central office and a downstream station and VCSELs are used.

DiGiovani et al (US 6,381,045) discloses a method and apparatus for bidirectional communication over a single fiber.

Pangrac et al (US 2001/0030785) discloses a communication system for distributing information via a network to one or more subscribers includes a multi-port switch modems, combiner etc.

Kimbrough et al (US 6,362,908) provides a multi-service, adaptable optical units for use in FTTC digital loop carrier system.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Li Liu whose telephone number is (571)270-1084. The examiner can normally be reached on Mon-Fri, 8:00 am - 5:30 pm, alternating Fri off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Vanderpuye can be reached on (571)272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


KENNETH VANDERPUYE
SUPERVISORY PATENT EXAMINER

Li Liu, September 25, 2006